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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/392,626

Applicant(s)

MOGI ET AL.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE & Amendment (10/16/02).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1. The request filed on 10/16/02 for a Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/392,626 is acceptable and a RCE has been established. An action on the RCE follows.

Response to Amendment

2. The amendment to the claims filed on 10/16/02, as well as the previously filed amendment, does not mention about the cancellation of **claim 26** although the Applicants state in the Remarks that claims 27-44 are the only remaining pending claims in the current application.

The Applicants are advised to formally state the cancellation of the above claim 26 in their next reply to avoid any confusion.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 27-30, 32, 34-39, 41, 43, and 44 are rejected under 35 U.S.C. 102(a) as being anticipated by Asami (JP 10-244707).

Regarding the base claims 27 and 37, Asami discloses an optical deflection-scan apparatus comprising a light source unit comprising a laser light source (1) and a driving circuit board (14) for driving said laser light source, said laser light source including a laser chip having a plurality of emission points (semiconductor laser chip 1 with two luminescent points P_1 and P_2 , Figs. 2 and 4) for emitting laser beams and a terminal (1a) for energizing the laser chip, said driving circuit board being connected to the terminal (via the small substrate 15 or via a flexible cable [not shown]) (see English Translation, page 9, section 14) of said laser light source and having a longitudinal edge (driving circuit board 24 having a horizontal longitudinal edge, Fig. 6,) scanning means (polygon mirror 105, Fig. 8) for scanning a surface to be scanned with the laser beams emitted by said light source unit, and a housing (20, Fig. 6) having a wall (Fig. 7) wherein said housing contains said scanning means (the optical box being defined as the housing of the scanning apparatus and thus inherently supporting and enclosing the polygon mirror) and supports said light source unit on the wall (Figs. 6, 7,) and wherein the terminal of said laser light source is fixed such that a straight line inclined with respect to the longitudinal edge of said driving circuit board passes the plurality of emission points (to adjust the spacing of the laser beams the laser light source unit along with the small substrate is rotated about the optical axis O, which is perpendicular to the surface of the driving circuit board, without rotating the driving circuit board such that the line connecting the light emitting points P_1 and P_2 is inclined with respect to the horizontal line, which is parallel to the longitudinal edge of the driving circuit board, as shown in Fig. 5. After the final adjustment of the position of the light emitting points, the

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driving circuit board is mounted on the laser holder by fixing the small substrate 15 or the flexible cable [not shown] to the driving circuit board such that the laser light source unit is fixedly connected to the driving circuit board . See page 10, section 16 of the English translation).

With regard to claim 28, Asami further the longitudinal edge of said driving circuit board being arranged parallel to the longitudinal edge of the wall of said housing (Fig. 6).

As to claims 29 and 38, Asami teaches the driving circuit board having a substantially rectangular shape (Fig. 6).

As to claims 30 and 39, Asami teaches the light source unit comprising a holder (21) holding the laser light source.

With regard to claims 32, 41, Asami teaches the plurality of emissions points (P_1 , P_2) of the laser light source being arranged linearly.

With regard to claims 34, 43, Asami also discloses the light source unit comprising a collimator lens (102, Fig. 8) for collimating the laser beams emitted from said laser light source and a lens barrel (113) holding said collimator lens, said lens barrel being integrated with said holder (Fig. 7.)

With regard to claims 35, 44, Asami teaches the laser light source being a multi-beam semiconductor laser.

With regard to claim 36, Asami also discloses the scanning means comprising a rotary polygon mirror (105) for deflecting the laser beams emitted by said light source

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unit and an imaging lens (106) for focusing the laser beams deflected by said rotary polygon mirror.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 31 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami in view of Aoki (U.S. 5,408,493).

Asami discloses all the basic limitations of the claimed invention except for the laser array being fixed with an inclination with respect to a reference surface of the laser holder.

However, Aoki discloses a laser scanning apparatus in which the laser (6, Fig. 4B) has an angle-adjusting holder (12) for adjusting an inclination angle with respect to the fixed plate (11) to obtain a desired point image position on the surface to be scanned.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Asami with the aforementioned teaching of Aoki. Doing so would allow the adjustment of the optical path of the laser beam to produce an image point at a desired position on the surface to be scanned.

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7. Claims 33, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami in view of Nakajima et al. (U.S. 5,999,345).

Asami discloses all the basic limitations of the claimed invention except for the multi-beam semiconductor laser having a plurality of two-dimensionally arrayed emission points.

However, it is well known in the art that the selection of one-dimensional or two-dimensional array lasers in an optical scanning device would be a matter of design choice to fit a specific requirement. Nakajima et al., for example, discloses a laser holder that can support a one-dimensional or two-dimensional laser array while allowing the adjustment of the distance between the multiple laser beams (Figs. 1, 3, 5 and 6). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the laser holder of Asami to hold a plurality of two-dimensional laser arrays as taught by Nakajima et al. Doing so would allow to increase the printing speed of the laser printer. Moreover, the implementation of such laser holder would involve only routine skill in the art.

Response to Arguments

8. Applicant's arguments filed 10/16/02 have been fully considered but they are not persuasive.

With regard to Applicants' argument that Asami fails to describe or to suggest that "[T]he pins [of the semiconductor laser 1] are not fixed to driving substrate 14", the examiner respectfully disagrees. Asami teaches that each of the lead pins (1a) is first

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fixed to the small substrate (15), which is rotated along with the semiconductor laser for adjusting the pitch of the scanned lines formed on the surface of the photosensitive member (107), and the connection-part (15b) of the small substrate is soldered to [the connection patterns (14b) of] the driving substrate (14) such that the laser semiconductor is electrically connected to and controlled by the driving substrate.

Furthermore, the examiner would like to point out that the recited limitation "said driving circuit board being connected to the terminal of said laser light source" does not convey that the terminal of the laser light source *should be directly* fixed to the driving circuit board. The specification does not indicate nor require such *direct* connection. Indeed, the disclosure teaches the multi-beam semiconductor laser 11 being mounted in the laser holder 11a, rotated through a predetermined rotational angle for adjusting in advance the inclination angle of the straight line. After the adjustment, the laser 11 is fixed to the laser holder 11a to obtain a unit, which is then fixed to the sidewall 8a of the optical box 8 with screws 11b for a final adjustment of the line interval T, the final adjustment being done after the driving circuit board 13 is *mounted on the laser holder 11a* (specification, page 15, lines 1-4). By the above teaching, the connection between the terminal of the laser light source and the driving circuit board is somehow made such that the laser light source can be controlled, but a *direct connection* between the terminal of the laser light source and the driving circuit board appears to be secondary or irrelevant to the present invention. By interpreting claims 27 and 37 in light of the specification, Asami '707 discloses all the recited limitations including the terminal of the

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laser light source being connected to the driving circuit board [via the small substrate 15 or via the flexible cable] such that the driving circuit can control the laser light source.

On the other hand, with regard to Applicants' argument concerning Asami not describing or suggesting that "a straight line passing a plurality of emission points of the laser light source is inclined with respect to a longitudinal edge of the driving circuit board", the examiner respectfully disagrees. Asami describes the laser array (1) having a plurality of points of emissions (P_1 and P_2 , Fig. 5) and being rotated around an optical axis O perpendicular to the driving substrate such that the spacing (ΔP) between the points of emissions and thus the pitch of the scanning lines is adjusted. The driving substrate (24, Fig. 7) is kept fixed during the adjustment and the longitudinal edge or upper edge of the driving substrate remains parallel to the horizontal or upper edge of the housing (20). By the above rotating motion of the laser light unit, the straight line connecting the points of emissions (P_1 and P_2) of the laser array is inclined with respect to the horizontal line (Fig. 5), and thus to the longitudinal edge of the driving substrate.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER
December 12, 2002